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10/596,982

09/01/2006

Rainer Mueller

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EXAMINER

GREEN, RICHARD R

ART UNIT

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3644

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/596,982	Applicant(s) MUELLER ET AL.	
	Examiner Richard R. Green	Art Unit 3644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 November 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8-12, 14, 15 and 21-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 8-12, 14, 15 and 21-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 November 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

The drawings were received on 11/6/2009. These drawings are acceptable.

Claim Objections

Claim **1** is objected to because of the following informalities: in paragraph 4 of the claim, "each of" should precede, "at least two fuselage insulation packages". Similarly, this or a similar term should be inserted twice in paragraph 5 before the same term. On the second page of claims, the terminology "the pair of fuselage insulation packages" has not been amended to "at least two", but should be changed to correspond to how the limitation is introduced.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims **1-3** and **23-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN-6,358,591 to Smith in view of the presentation, "Informational Material On Burnthrough" presented at the International Aircraft Materials Fire Test Working Group meeting of June 2003 (hereafter, "BTAC").

The BTAC was presented on June 23, 2003, as evidenced by the minutes of the meeting (see enclosed document, "International Aircraft Materials Fire Test Working Group Meeting"), which on page 1 list the presentation under the heading "Burnthrough Presentation and Discussion", "Informational Material on Burnthrough Test: Presentation Titled: "PresentationBTAC". A copy of the BTAC presentation was posted to internet on August 4, 2003, as indicated by an archival copy of the Fire Safety Branch website from August of 2003 (also enclosed).

Regarding claims 1-3, 23 and 24: Smith teaches in figs. 1-5 and 7 an aircraft fuselage (21) including a plurality of stringers (28) stiffening panels of an outer skin (27) and ribs (31) arranged perpendicularly to a longitudinal axis of the fuselage, the ribs (31) each being attached at a first end to one of the stringers (28) and having a rib carrier integrated into the rib on an unattached end of the rib and a hole (44) in a rib attachment region disposed between the first end and the rib carrier; and

Fuselage insulation packages (20) having an elongated shape and situated in a direction of the longitudinal axis, each package comprising flat end sections (35) and a foil (23) completely enclosing a burn-through-proof barrier layer (33) and a thicker burn-through-proof insulation layer (24) (col. 7, lines 17-26: "fire-blocking layer 33"; col. 7, line 65 - col. 8, line 12: the lofted insulation 24 is preferably made as fire-blocking insulation; see col. 4, lines 4-17 for a description of how the terms, "fire-blocking material" and "fire blocking insulation" are defined as exhibiting burn through times of at least 60 seconds; see also tables 1 and 2, showing several configurations with burnthrough times greater than four minutes), and being secured using a through-frame

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fastener (26) with first and second retainers (34) in the rib attachment region (fig. 4; see also col. 1, lines 59-67 and col. 9, lines 2-11).

Smith fails to teach an arrangement whereby the insulation packages overlap over the rib without the use of a cap strip.

BTAC shows on page 4 ("Blanket Overlap") an arrangement of insulation packages comprising:

A plurality of ribs attached to a plurality of stringers (see a perspective view showing ribs and stringers on page 6) the ribs each being attached to the stringers at a first end and having a rib carrier integrated into the rib on an unattached end of the rib, and a rib attachment region with a through-hole disposed between the first end and the rib carrier (see page 7, showing a through-frame fastener); and

At least two fuselage insulation packages of elongate shape, each package comprising a longer left end section and a shorter right end section opposite the first end (see page 4, titled, "Blanket Overlap");

A first attachment element having first and second retainer ends at either end and being disposed through the through-hole of the rib (see page 7, showing a through-frame fastener); BTAC further teaches a fire resistant fastener for retaining insulation (see page 10, titled "Should be Fire Resistant").

In the blanket overlap arrangement (shown in page 4), the longer left end section rises up and over the rib to cover the shorter right end section. If a through-frame fastener such as the one shown in page 7 were used to secure the blankets, the fastener would have to pass through all portions of the insulation blankets adjacent to

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the rib, passing from right to left through a hole in a package region of the right-hand blanket (analogous to the claimed first hole), the through-hole in the rib, a hole in the shorter right end section of the left-hand blanket (analogous to the claimed third hole), and a hole in the longer left end section of the right-hand blanket (analogous to the claimed second hole); at the next rib to the left, another hole is formed in the left-hand blanket where the corresponding fastener will pass through. In this fashion, the longer left end of the right-hand blanket would be retained on both the left and the right of the rib, while the shorter right end of the left-hand blanket is retained on the left of the rib.

It would have been obvious to a person having ordinary skill in the art at the time of the invention to arrange the insulation packages of Smith in the blanket overlap arrangement shown in the BTAC for the purpose of reducing the risk of burnthrough by presenting half as many potential burnthrough pathways, and for the purpose of using all blankets of the same size by replacing the cap strip with blanket overlap, simplifying the manufacturing process. It would also have been obvious to make the attachment post and retainers of Smith fire resistant as taught by BTAC, for the purpose of adding additional fire protection. Though Smith does not show interior paneling in the figures, col. 1, lines 12-15 describe the invention to be intended for use in commercial passenger airplanes, which are well known to have interior paneling covering the ribs, stringers and insulation; it would have been obvious to a person having ordinary skill in the art at the time of the invention to cover the insulation, ribs and stringers of Smith as modified by BTAC with interior paneling, for the aesthetic comfort of the passengers inside the aircraft.

Regarding claim 25: the furthest ridges (45) of the attachment post (26) may be considered as retention flanges.

Claims 4-6, 8, 9, 21, 22 and 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of BTAC as applied to claims 1-3 above, and further in view of US Patent 4,907,923 to McGrath, Jr. (hereafter "McGrath").

Regarding claims 4-6, 9 and 24-28: Smith teaches in fig. 4 an attachment system comprising a through-frame fastener (26), described as a Christmas tree fastener in col. 1, lines 59-67, which is shown in fig. 4 to be widest at the center, where it extends outward in a radial flange, and to have spaced ridges (45) formed in its surface along its length on both sides. Two washers (34) attach to either end of the post (26) and are held in place by the Christmas tree ridges (45), covering the holes in the adjacent insulation packages on either side of the rib, and are considered as first and second retainers.

The attachment post (16) as considered above meets the claimed requirements of the casing of claims 4-6, 9 and 25-28. Smith fails to teach a first attachment element comprising a pin encased in a plastic casing.

McGrath teaches in figs. 6-7 a plastic bolt (70) also having pine-tree ridges (18; see fig. 1), which has a metallic barbed wire (72) added at its center, for additional strength (col. 5, lines 5-19); the wire (72) has flanges in a middle portion and at either end (four barbs are shown in fig. 6). It would have been obvious to a person having ordinary skill in the art at the time of the invention to insert the barbed wire of McGrath into the center of the attachment post of Smith for the purpose of providing additional

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strength. If it is not clear whether one of ordinary skill in the art, in configuring the attachment elements of Smith to be fire resistant, would have continued to use plastic, it would have been obvious to a person of ordinary skill in the art to manufacture the attachment elements of Smith out of a fire resistant plastic, since these are lighter than metallic attachment elements.

Regarding claim 8: Smith is silent to a dome-shaped end region of the plastic attachment post. However, it is considered that the criticality of the post lies in the shape of the ridges, which prevent the washers from slipping off by being larger in diameter than the holes in the washers and by presenting stepped gradations facing rearwards towards the washers. It would have been obvious to a person having ordinary skill in the art at the time of the invention to configure the tip of the attachment post of Smith in the shape of a paraboloid dome, for the purpose of blunting the tip to prevent injury or unintentional damage to the insulation packages during installation.

Regarding claims 21 and 22: Smith is silent on how the ribs are fastened to the stringers. However, it is old and well known to use steel bolts and nuts to fasten ribs and stringers together in aircraft. Further, McGrath teaches a nut made of molded nylon (McGrath col. 5, lines 37-40), which is an aramide. It would have been obvious to a person having ordinary skill in the art at the time of the invention to attach the ribs to the stringers of Smith using conventional steel bolts, and using the nylon nuts of McGrath, to save on weight and cost of the nut, to connect the ribs to the stringers in a known manner.

Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of BTAC and Long as applied to claim 28 above, and further in view of USPN-4,842,465 to Pease et al.

Regarding claims 29 and 30: Neither Long, Smith nor BTAC teach first and second retainers comprising a disc and shaped flange of different materials.

Pease teaches in figs. 5 and 6 an insulation retainer comprising a first disc (22) having a central hole (25) and first and second surfaces on its inner and outer circumferences, which is encased by a flange (34) of a retainer lock (26); the flange (34) is in the shape of a cylinder and extends from the disc in a radial direction from its second surface. Pease discloses in col. 7, lines 7-13, that the insulation retainer discs (22) are preferably made of stainless steel, and that the retainer lock (26) may be made of a ceramic material, whereby the flange (34) would be made of ceramic.

Stainless steel and ceramic are both considered to be fireproof. Stainless steel is inherently resistant to fire and burn-through-proof, as evidenced by the document, "Full-Scale Test Evaluation of Aircraft Fuel Fire Burnthrough Resistance Improvements" by Marker et al., which describes (§ 3, page 97) that steel frame members "assure reuse" even when used in a burnthrough resistance test, indicating that stainless steel is inherently burn-through-proof. Ceramic materials are well known to withstand high temperatures; as evidence, Marker describes (§ 4, page 97, fig. 2) that a ceramic fiber matt has superior burnthrough resistance to fiberglass insulation.

Claims 10-12, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of BTAC as applied to claim 1 above, and further in view of USPN 4,805,366 to Long.

Regarding claims 10-12: The washers (34) of Smith are not disclosed to comprise a disc joined to a jacket, and so Smith fails to teach a second attachment element according to claim 10.

Long teaches snaplock rings (36 and 38) designed to be used in the same fashion as the washers of Smith, by being held in place by ridges on a post fastener (col. 2, lines 18-35), and are shown in figs. 2-4 to each comprise:

A plastic disc (36 or 38) comprising first (62) and second (39) rings and joined to an insulation jacket (the web extending between the two) with a hole formed in the center, the hole having a smaller diameter than that of the ridges on the post fastener (fig. 2); braces (61) extend from the outside circumference of the second ring (formed by fingers 39) to the inside circumference of the first ring (flange 62), and give the rings a truncated cone profile (see fig. 2).

It would have been obvious to a person having ordinary skill in the art at the time of the invention to replace the washers of Smith with the snaplock rings of Long, as a simple replacement of known retaining parts, and for the added strength imparted by the braces.

Regarding claims 14 and 15: Neither Long, Smith nor BTAC teaches a metallic disc-shaped core element embedded in a plastic casing. However, the examiner takes Official Notice that it is well known in the art for aircraft to have landing gear of the type

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where a metal wheel hub is encased by a tire, and that modern tires are known which comprise plastic materials. It would have been obvious to a person having ordinary skill in the art at the time of the invention to provide the aircraft of Smith with landing gear comprising a metal rim encased by a tire comprising a plastic material of a lower thermal conductivity than the metal rim, to assist in landing the plane in a controlled manner. Note that claim 14 does not describe the disc-shaped core as related to the second attachment element of claim 10.

Response to Arguments

Applicant's arguments, see page 17, paragraph 2 to the top of page 18, filed 11/6/2009, with respect to the rejections under 35 USC 112, 1st paragraph for enablement have been fully considered and are persuasive. The rejection of 8/6/2009 has been withdrawn.

Applicant's arguments, see page 18, paragraphs 2-4, filed 11/6/2009, with respect to the rejections under 35 USC 112, 2nd paragraph regarding the branch end of a parabola and the arrangement of the braces of claim 12 have been fully considered and are persuasive. The rejection of 8/6/2009 has been withdrawn.

In light of applicant's discussion, see page 17, paragraph 2, to the top of page 18, the pin and casing of claims 25-28 are considered as components of the first attachment element, and the rejection of claim 25 under 35 USC 112, 2nd paragraph is withdrawn.

Applicant's arguments with respect to claims 1-6, 8-12, 14, 15 and 21-30 have been considered but are moot in view of the new ground(s) of rejection. However, issues which remain will be discussed below.

Applicant discusses the consideration of the term burn-through-proof at length, and Applicants arguments (pages 17-24) are partly persuasive, though the specific standard for fireproof given is not considered to be inherent to the claim term.

Applicant suggests (Remarks page 20, ¶ 2-3) that the proper standard to apply for burn-through-proof is the FAA standard for fireproof provided by Applicant at the end of the response of 4/20/2009. The document provided, AC 20-135, defines fireproof as the capacity to withstand a 2000 degree Fahrenheit flame for at least fifteen minutes, and fire resistant as the same capacity for at least five minutes. However, these particular numbers are described to be specific to the purposes of the Advisory Circular, which deals with methods of compliance for firewalls in engine nacelles, which are not mandatory (first page, under "Purpose"). It is not considered that one of ordinary skill in the art would necessarily have interpreted the claim terms as having those precise meanings. Additionally, this standard is not the one referred to by Smith, which requires only two minutes of protection, is titled as an evaluation, and is not a regulatory document (Smith col. 4, lines 25-40), nor is it considered that one of skill in the art would necessarily apply a standard for engine nacelles to fuselage insulation elements.

In fact, the FAA has different standards for fireproof depending on what the element is, where it is located, what other fire protections are in place, what sort of fire resistance is meant, among other variables. FAA Regulations printed in The Federal

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Register, Vol. 68, No. 147, in 2003 defined "burnthrough time" as the time for burner flame to penetrate a test specimen (page 45068, bottom right, under "Definitions"), and set a requirement that test specimens must not allow fire or flame penetration in less than 4 minutes (page 45083, col. 2, under "(h) Requirements"). This requirement applies only to the insulation itself, and is described throughout the document not to apply to various elements, many of which are governed by further regulations. In particular, fasteners used to install insulation are described (page 45052, col. 2, first indent) to have different tests for flammability and burnthrough protection. If FAA regulations are to be used, every claim element would be subject to a different standard, some having more than one requirement, and it is not clear which regulation one of ordinary skill in the art would apply to a burn-through-proof fastener.

FAA standards for flame penetration appear to mainly involve various periods of time to which an element must withstand a fire without letting the fire come through, and the length of time required may vary greatly depending on the element and the application. A standard this specific cannot be persuasively required in the interpretation of the term in the claims, since the specification does not mention a particular standard, or otherwise define a standard. The test described in the patent to Smith requires two minutes, a FAA test standard from 2003 requires four minutes, and FAA advisory circular 20-135 requires fifteen minutes. Additionally, though Applicant states that the term burn-through-proof is a literal translation of the German word for fireproof (Remarks page 24), resistance to burnthrough is acknowledged as distinct from flame penetration (Federal Register, page 45048, col. 3, second indent) and to

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depend on multiple factors within the airplane. It is not necessarily the case that one of ordinary skill in the art would interpret the term burn-through-proof in the claims as meaning "fireproof", and if they did it is not clear what standard they would apply.

Nevertheless, the gist of Applicant's arguments is persuasive. The term burn-through-proof is now considered to require that the prior art recognize a level of fire resistance, such as by referring to an element as fireproof, or else specify a particular material known for fire resistance, though no specific standard of flame temperature or length of duration is considered to be inherent to the term itself. In the case of the insulation packages themselves, it is noted that Smith teaches packages having burnthrough times greater than four minutes, which is a relevant standard specific to fuselage insulation.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard R. Green whose telephone number is (571)270-5380. The examiner can normally be reached on Monday - Thursday 8:00 am - 6:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Mansen can be reached on (571)272-6608. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Examiner, Art Unit 3644

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